

IN THE CLAIMS:

This listing of claims will replace all prior versions and listings of claims in the application:

1. (Currently Amended) An automatic vehicle exterior light control system comprising:
a controller configured to effect automatic operation of an exterior light as a function of an ambient light value, wherein said ambient light value is a weighted average of a plurality of ambient light level readings acquired from a photo transducer, said controller is further[[_]] configured to generate an exterior light control signal as a function of the presence of an atmospheric condition of interest, wherein said controller is further configured to distinguish between reflections off of a highly reflective surface and reflections off of atmospheric conditions of interest, wherein an exterior light control output of said controller is in a first state when reflections off of a highly reflective surface are detected and said exterior light control output is in a second state when reflections off of atmospheric conditions of interest are detected.
2. (Original) An automatic vehicle exterior light control system as in claim 1 wherein said highly reflective surface is selected from the group comprising: an at least partially wet road, an at least partially snow covered road, an at least partially ice covered road, a surface of a snow pile along a road, and a surface of an at least partially snow covered road side.
3. (Original) An automatic vehicle exterior light control system as in claim 1 wherein said atmospheric condition of interest is selected from the group comprising: fog, mist, snow, sleet, hail, rain, steam, smoke and dust.
4. (Original) An automatic vehicle exterior light control system as in claim 3 wherein said highly reflective surface is selected from the group comprising: an at least partially wet road, an at least partially snow covered road, an at least partially ice covered road, a surface of a snow pile along a road, and a surface of an at least partially snow covered road side.

5. (Original) An automatic vehicle exterior light control system as in claim 1 wherein said reflections are identified by employing at least one of the parameters selected from the group comprising: mean grayscale value of at least a portion of at least one image, total grayscale value of at least a portion of at least one image, average grayscale value of at least a portion of at least one image, slope of pixel column location versus pixel grayscale value of at least a portion of a column of pixels within at least one image, slope of pixel row location versus pixel grayscale value of at least a portion of a column of pixels within at least one image, intercept of pixel column location versus pixel grayscale value of at least a portion of a column of pixels within at least one image, slope of pixel row location versus pixel grayscale value of at least a portion of a column of pixels within at least one image, a coefficient of determination, parabolic fit of at least a portion of column pixel value averages in at least one image, multiple images of differing exposure times, inputs from vehicle pitch sensors, a low-pass filter applied to at least a portion of an image, gradual vertical cutoff in at least a portion of pixel rows within at least one image, row average grayscale value net increase moving downward in at least one image, white-to-red ratio of at least one pixel in at least one white image and at least one pixel in at least one red spectral filtered image, sum of average grayscale values for at least one row in at least one image, increase brightness of controlled vehicle's exterior light and detect increase in reflection, at least one probability function, and at least one neural network.

6. (Original) An automatic vehicle exterior light control system as in claim 1 wherein said controller is further configured to manipulate one of the items selected from the group comprising: an exterior light adjustment rate, an image analysis parameter, a sensitivity parameter, fog light signal, taillight brightness, a field of view parameter, a spectral filter parameter, an algorithm parameter, an algorithm activation, an algorithm deactivation, an exterior light maximum brightness limit, and an exterior light minimum brightness limit as a function of detected reflections.

Claims 7-16 (Cancelled).

17. (Currently Amended) An automatic vehicle exterior light control system, comprising:

a controller configured to effect automatic operation of an exterior light as a function of an ambient light value, wherein said ambient light value is a weighted average of a plurality of ambient light level readings acquired from a photo transducer, said controller is further[[_]] configured to identify the source of a reflection in an image by employing at least one of the parameters selected from the group comprising: mean grayscale value of at least a portion of at least one image, total grayscale value of at least a portion of at least one image, average grayscale value of at least a portion of at least one image, slope of pixel column location versus pixel grayscale value of at least a portion of a column of pixels within at least one image, slope of pixel row location versus pixel grayscale value of at least a portion of a column of pixels within at least one image, intercept of pixel column location versus pixel grayscale value of at least a portion of a column of pixels within at least one image, slope of pixel row location versus pixel grayscale value of at least a portion of a column of pixels within at least one image, a coefficient of determination, parabolic fit of at least a portion of column pixel value averages in at least one image, multiple images of differing exposure times, inputs from vehicle pitch sensors, a low-pass filter applied to at least a portion of an image, gradual vertical cutoff in at least a portion of pixel rows within at least one image, row average grayscale value net increase moving downward in at least one image, white-to-red ratio of at least one pixel in at least one white image and at least one pixel in at least one red spectral filtered image, sum of average grayscale values for at least one row in at least one image, increase brightness of controlled vehicle's exterior light and detect increase in reflection, at least one probability function, and at least one neural network, wherein a state of an exterior light control output of said controller is at least partially dependent upon the source of said reflection in said image.

18. (Original) An automatic vehicle exterior light control system as in claim 17 wherein said controller is further configured to manipulate one of the items selected from the group comprising: an exterior light adjustment rate, an image analysis parameter, a sensitivity parameter, fog light signal, taillight brightness, a field of view parameter, a spectral filter

parameter, an algorithm parameter, an algorithm activation, an algorithm deactivation, an exterior light maximum brightness limit, and an exterior light minimum brightness limit as a function of detected reflections.

Claims 19-22 (Cancelled)

23. (Currently Amended) An automatic vehicle exterior light control system, comprising:

a controller configured to effect automatic operation of an exterior light as a function of an ambient light value, wherein said ambient light value is a weighted average of a plurality of ambient light level readings acquired from a photo transducer, said controller is further configured to detect at least one of a pedestrian and a bicyclist and further configured to provide a corresponding indication to an operator of a controlled vehicle, wherein a state of an exterior light control output of said controller is at least partially dependent upon detection of either a pedestrian or a bicyclist.

24. (Original) An automatic vehicle exterior light control system as in claim 23 further configured to disable automatic operation of at least one high beam headlight in response to an operator activated input device.

25. (New) An automatic vehicle exterior light control system as in claim 1, wherein said weighted average is of a most recent approximately 16 photo sensor readings with approximately 100 ms intervals.

26. (New) An automatic vehicle exterior light control system as in claim 1, wherein said weighted average is an exponential time weighted average of a most recent approximately 256 photo sensor readings with 100 ms intervals.

Applicants : Joseph S. Stam et al.
Appln. No. : 10/777,468
Page : 6

27. (New) An automatic vehicle exterior light control system as in claim 1, wherein said photo transducer is a high dynamic range imager, such that high dynamic range images are acquired to detect an atmospheric condition.

28. (New) An automatic vehicle exterior light control system as in claim 27, wherein said high dynamic range image is a synthetic high dynamic range image.